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GEOLOGY.

GEOLOGICAL SURVEY OF IOWA. — The legislature of this state has discontinued the survey which was being so ably conducted by Dr. C. A. White. This seems inexplicable in a state which must necessarily be very largely benefited by the exploration and discovery of its natural resources. Legislatures, however, are not governed by the same rational laws of self interest which actuate private corporations and individuals. Though single mining and manufacturing companies consider it necessary to employ an engineer or a chemist, the legislatures are far too poor or too anxious about the next election to pay any attention to the development of the natural resources and mining interest of the state. Provision has been made, however, for the publication of the State Geologist's Report, which is to be completed in the same style as the Illinois Geological Survey.

NEW FOSSIL TURKEY. — At the meeting of the Philadelphia Academy of Natural Sciences, March 8th, Professor O. C. Marsh of Yale College, exhibited a number of fossil remains from the Post-tertiary deposits of Monmouth county, New Jersey, which indicate a new and distinct type of birds, closely related, apparently, to the turkey, and not unlikely the progenitors of the existing species. The specimens shown were portions of three skeletons, of different ages, which belonged to birds about the size of the common wild turkey (*Meleagris gallopavo* Linn.), although proportionally much taller. The tibiæ and tarso-metatarsal bones were, in fact, so elongated, as to resemble those of wading birds. These interesting remains were referred provisionally by Professor Marsh to the genus *Meleagris*, and the species they represent was named *Meleagris altus*.

MICROSCOPY.

CIRCULATION OF THE LATEX IN THE LATICIFEROUS VESSELS. — Within a few days I have repeated some experiments (first made more than fifteen years since) upon the circulation of the latex in the laticiferous vessels of the leaf of *Chelidonium majus*, to which I desire to call attention.

Before detailing these experiments it ought, perhaps, to be stated that Amici, Dutrochet and Mohl deny any visible motion in them except such as is the result of injury; while Schleiden says "that in the uninjured vessels, the motion of the latex can very seldom be successfully shown;" even in *Chelidonium majus* it is only occasionally possible, and then presents great optical difficulties.

Now, I find, by potting a young plant of this kind, and placing any young leaf between two strips of glass (upon which a drop of glycerine has been put) in such a manner as to bring the under side of the leaf up-

permost on the stage of the microscope, so as to throw the strong reflected sunlight upon it from the mirror below, that;

First, there is occasionally either a nearly total want of motion or only a very slow one of the colored granules, or at times a very rapid motion of the particles to be seen, running from right to left, if the vessel happens to run horizontally on the stage, or toward me if the vessel runs from the outer to the inner border of the stage, and

Secondly, that while *watching* the circulation as seen through the lenses in the reflected sunlight, if I move the diaphragm from left to right, so as to make the shadow enter upon the right of the field of view, a brisk circulation (no matter how quiet it had been before) is instantly witnessed, which appears to be changed in direction as we move the diaphragm back again; and that the direction of the *circulation* can thus be *changed* at *will* by the *interception of the sunlight.* This same result can also be witnessed by the passage of clouds between the sun and mirror. The actual direction in the plant is *from* the apex of the leaf *in sunlight* and *toward* it in the shade. This *change in direction* is *so rapid* when produced by the *shadow* of *fast flitting* clouds across the sun's disc that it would seem that the change of temperature could hardly be felt by the plant, it certainly could not be by an ordinary thermometer; but a heated body properly placed will quicken the circulation, as will cold retard it. If I mistake not we have here a fine demonstration of the conversion of light into heat by its passage through the vegetable tissues, and of heat into motion by its action upon the laticiferous vessels.

Prof. Balfour in the Article Botany, "Ency. Brit.," says that in plants with milky and colored juices evident movements have been perceived, and mentions the calyx leaves of *Chelidonium majus*, as also the India-rubber plant, the gutta-percha tree, the dandelion, and the *Euphorbia;* and through your journal, should you think this article worth insertion, I would ask assistance in the examination of this interesting subject. By mixing a little of the colored juice with alcohol, and adding a little water, it will be seen that the motion of the liquids in the vessels cannot be the result of evaporation. And that it is not an ocular illusion may be argued from the fact that three independent observers witnessed the changes of motion as above described. — H. C. PERKINS, M. D., *Newburyport.*

Note, May 12. I have just examined the circulation of the latex in the laticiferous vessels of *Leontodon taraxacum* under the same circumstances as that of *Chelidonium* and am pleased to find precisely the same results. — H. C. P.

DOES BOILING DESTROY GERMS? — This question cropped up in the course of the Pasteur and Pouchet controversy on Heterogeny, and it appeared that there are some germs that are not destroyed by boiling, but which require a temperature some degrees (10° or 12°, we believe) above boiling. This is another simple problem for microscopists. — *Monthly Microscopical Journal.*